

PATENT COOPERATION TREATY

PCT/JP2003/000039



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 02S1293P	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/JP2003/000039	International filing date (day/month/year) 07 January 2003 (07.01.2003)	Priority date (day/month/year) 08 January 2002 (08.01.2002)
International Patent Classification (IPC) or national classification and IPC H01L 21/68, B65G 49/06, 49/07		
Applicant TOKYO ELECTRON LIMITED		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>9</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>10</u> sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input checked="" type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input checked="" type="checkbox"/> Certain defects in the international application</p> <p>VIII <input checked="" type="checkbox"/> Certain observations on the international application</p>

Date of submission of the demand 29 July 2003 (29.07.2003)	Date of completion of this report 07 April 2004 (07.04.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

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I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
pages 1-33, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☒ the claims:
pages 18, as originally filed
pages _____, as amended (together with any statement under Article 19
pages 1, 4, 7, 9-13, 17, 19-21, filed with the demand
pages 5, 27-36, filed with the letter of 08 January 2004 (08.01.2004)
- ☒ the drawings:
pages 1-23, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☒ the claims, Nos. 2, 3, 6, 8, 14-16, 22
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☒ not complied with for the following reasons:

The common matter of claims 1, 4, 5, 7, 9-13, 17-21, and 23-36 is a carrying mechanism wherein a carrying base table has two holding arms, the holding surfaces of both holding arms are substantially positioned on the same plane, and the projection direction of both holding arms is substantially the same side.

Nevertheless, after investigation, it is found that this carrying mechanism is disclosed in the document EP, 1030347, A1 (USHIODENKI K.K.), 23 August 2000 (23.08.00), paragraphs [0034]-[0043]; Fig. 1, and is clearly not novel.

As a result, a carrying mechanism wherein a carrying base table has two holding arms, the holding surfaces of both holding arms are substantially positioned on the same plane, and the projection direction of both holding arms is substantially the same side does not exceed the scope of prior art, so this common matter (a carrying mechanism wherein a carrying base table has two holding arms, the holding surfaces of both holding arms are substantially positioned on the same plane, and the projection direction of both holding arms is substantially the same side) does not have special technical significance in the sense of PCT Rule 13.2, Section 2.

Also, there is no matter common to all of the claims.

There is no other common matter that could be considered of special technical significance in the sense of PCT Rule 13.2, Section 2, so there is no technical relationship in the sense of PCT Rule 13 among the other inventions.

Therefore claims 1, 4, 5, 7, 9-13, 17-21, and 23-36 clearly do not satisfy the requirement of unity of invention.

As will be described next, this international examining authority found two or more inventions in this international application.

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.
- ☐ the parts relating to claims Nos. _____

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Box IV:

- I) Claims 1, 4, 10, 12, 17-21, 23, 24
- II) Claims 5, 7
- III) Claim 9
- IV) Claims 27-36

Furthermore, claims 11 and 13 are dependent on two of the aforesaid inventions, and claims 25 and 26 have constitutions that are unclear in specifying inventions, so we cannot study the requirement of unity.

We were able to investigate all claims that can be investigated without requesting additional fees, so payment of additional fees was not requested.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1, 4, 5, 7, 9-13, 17-21, 23-36	YES
	Claims		NO
Inventive step (IS)	Claims	1, 4, 9, 10, 12, 17-21, 23, 24, 31	YES
	Claims	5, 7, 11, 13, 25-30, 32-36	NO
Industrial applicability (IA)	Claims	1, 4, 5, 7, 9-13, 17-21, 23-36	YES
	Claims		NO

2. Citations and explanations

Document 1: EP, 1030347, A1 (USHIODENKI K.K.), 23 August 2000

Document 2: US, 4660464, A (SANGYO KOGYO K.K.), 28 April 1987

Document 3: Microfilm of the specification and drawings annexed to the written application of Japanese Utility Model Application No. 105392/1986 (Laid-open No. 13682/1988) (SANYO ELECTRIC CO., LTD.), 29 January 1988

Document 4: Microfilm of the specification and drawings annexed to the written application of Japanese Utility Model Application No. 71959/1990 (Laid-open No. 29380/1992) (AISAN INDUSTRY CO., LTD.), 09 March 1992

Document 5: JP, 9-197008, A (SANYO ELECTRIC CO., LTD.), 31 July 1997

Document 6: JP, 10-308430, A (DAINIPPON SCREEN CO., LTD.), 17 November 1998

Document 7: JP, 2001-148410, A (TOKYO ELECTRON LTD.), 29 May 2001

Document 8: JP, 7-321178, A (HITACHI, LTD.), 08 December 1995

Document 9: US, 5838121, A (APPLIED MATERIALS, INC.), 17 November 1998

The subject matter of claim 5 does not involve an inventive step on account of document 1 cited in the ISR (paragraphs [0034]-[0043], Fig. 1) and newly cited document 2 (full text, all drawings).

Employing document 2's clean tunnel 21, which is provided with air routes 24c and 24s and exhaust port 27, in the work carrying mechanism RA of document 1 for transport to a processing apparatus would be easy for a person skilled in the art. Also, achieving two pin set degrees of freedom and disposition with a constitution that provided it on a second base table 2 that was linearly moveable as in document 1, has the two holding surfaces in substantially the same plane, and makes them project in the same direction would be easy for a person skilled in the art.

The subject matter of claim 7 does not involve an inventive step on account of document 1 and document 2 and document 3 cited in the ISR (page 5, line 9 to page 8, line 16; Figs. 1-3).

Making the three-axis coaxial mechanism of document 3 and using a drive mechanism that drives to correspond to three degrees of freedom as the drive mechanism for two arms that rotate and slide the base table would be easy for a person skilled in the art.

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Box V:

The subject matter of claim 11 does not involve an inventive step on account of document 1 and document 2 and document 4 cited in the ISR (page 8, line 11 to page 9, line 13; Fig. 1, Fig. 3, Fig. 4).

Sliding in the converging direction as in document 4 as the drive mechanism for two sliding arms would be easy for a person skilled in the art.

The subject matter of claim 13 does not involve an inventive step on account of document 1 and document 2 and document 5 cited in the ISR (column 3, lines 10-11; column 3, lines 22-29; column 5, lines 2-9; Fig. 1, Fig. 6).

Sliding in the dispersing direction as in document 5 as the drive mechanism for two sliding arms would be easy for a person skilled in the art.

The subject matter of claim 25 does not involve an inventive step on account of newly cited document 6 (paragraphs [0072]-[0090], Fig. 5, Fig. 6) and newly cited document 7 (paragraphs [0090]-[0078], Fig. 13).

Document 6 describes the point about providing hands equipped with substrate holding surfaces at the tips of two intermediate arms respectively, having the substrate holding surfaces at nearly the same height, and projecting handles at substantially the same side.

Document 7 describes the point about driving a holding member 67 by a motor 94 disposed in a multi-articulated arm. Using this in document 7's hand would be easy for a person skilled in the art.

The subject matter of claim 26 does not involve an inventive step on account of document 6 and document 7.

Document 6 describes a plurality of processing units connected in parallel for the linear transport route 201.

The subject matter of claims 27 and 29 does not involve an inventive step on account of document 6 and newly cited document 8 (full text, all drawings).

Document 8 describes an arm equipped with two hands that simultaneously carry two substrates. Using two separate arms that can be rotated by column 82, as described in document 6, instead of this arm and driving them simultaneously in order to simultaneously carry substrates would be easy for a person skilled in the art.

The subject matter of claim 28 does not involve an inventive step on account of document 6 and document 8 and newly cited document 9 (full text, all drawings).

Document 6 describes the point about a carriage 302 linearly moving along a linear transport route 201.

Document 9 describes the point about simultaneously extending and simultaneously pulling a wafer blade assembly 540 when a robot 500 rotates centered on axis A, so simultaneously extending and contracting the arm while doing the carriage's linear movement described in document 6 would be easy for a person skilled in the art.

The subject matter of claim 30 does not involve an inventive step on account of document 6 and document 8.

Document 8 describes the point that it is possible to exhaust a load lock chamber 14 that is provided together with the processing chamber around a transport chamber 10 from atmosphere pressure status to vacuum status, and the point that a gate valve with the transport chamber is opened after the load lock chamber is exhausted to vacuum, so it is found that the transport chamber can be exhausted to vacuum.

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Box V:

The subject matter of claim 32 does not involve an inventive step on account of document 6, document 8 and document 4.

Sliding in the converging direction as described in document 4 as a drive mechanism for two arms would be easy for a person skilled in the art.

The subject matter of claim 33 does not involve an inventive step on account of document 6, document 8 and document 5.

Sliding in the dispersing direction as described in document 5 as a drive mechanism for two arms would be easy for a person skilled in the art.

The subject matter of claim 34 does not involve an inventive step on account of document 6, document 8 and document 9.

Document 9 describes the point about simultaneously extending and simultaneously pulling the wafer blade assembly 540 when a robot 500 rotates centered on axis A.

The subject matter of claim 35 does not involve an inventive step on account of document 6, document 8 and document 9.

Document 6 describes the point about the carriage 302 linearly moving a linear transport route 201.

Document 9 describes the point about simultaneously extending and simultaneously pulling the wafer blade assembly 540 when the robot 500 rotates centered on axis A, so simultaneously extending and contracting the arm while doing the carriage's linear movement described in document 6 would be easy for a person skilled in the art.

The subject matter of claim 36 does not involve an inventive step on account of document 6 and document 8.

Document 8 describes the point about simultaneously extracting two objects to be processed from a load lock chamber and simultaneously sending them to a processing apparatus.

Using two processing apparatuses instead of a processing apparatus that has two processing stages separated by a partition plate as described in document 8 would be easy for a person skilled in the art.

The subject matter of claims 1, 4, 9, 10, 12, 17-21, 23, 24, and 31 is not described in any of the documents cited in the ISR and appears to be non-obvious to a person skilled in the art.

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VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

The invention of claim 7 cites the invention of claim 6, which was deleted; this is inappropriate.

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VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The invention of claims 25 and 26 says "said carrying base table" but there is no previous reference to a carrier base table so "said" is inappropriate. Also, the constituent relationship of the carrier base table with other members is unclear.